

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte STEFAN UHLENBROCK



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Appeal No. 2005-1678  
Application No. 09/882,515

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ON BRIEF

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Before KIMLIN, PAK, and WALTZ, Administrative Patent Judges.  
WALTZ, Administrative Patent Judge.

**DECISION ON APPEAL**

This is a decision on an appeal from the primary examiner's final rejection of claims 31, 32, 45 through 48, 50 through 54, 56 and 57. Claims 49 and 55 are the only other claims pending in this application and stand objected to as allowable but depending from a rejected claim (Brief, page 2).<sup>1</sup> We have jurisdiction pursuant to 35 U.S.C. § 134.

According to appellant, the invention is directed to an apparatus and system for vaporizing substances for vapor

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<sup>1</sup>We note that appellant proposed an amendment including these claims but the examiner has not yet acted on this amendment (see the amendment dated Nov. 17, 2004).

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deposition onto a substrate, featuring the dissolution of precursors in an ionic liquid (Brief, page 2). Representative independent claim 31 is reproduced below:

31. An apparatus for vaporizing and transporting precursor molecules to a deposition chamber for deposition of a thin film on a substrate, the apparatus comprising:  
an ionic liquid source;  
a carrier gas source in fluid communication with the ionic liquid source; and  
a deposition chamber in fluid communication with the carrier gas source.

The examiner relies on the following references as evidence of obviousness:

Jones et al. (Jones)	4,839,249	Jun. 13, 1989
Ballingall, III et al. (Ballingall)	4,911,101	Mar. 27, 1990
Blomgren et al. (Blomgren)	5,188,914	Feb. 23, 1993
Abdul-Sada et al. (Abdul-Sada) (Published International Application)	WO 95/21872	Aug. 17, 1995
Freemantle, "Designer Solvents," <i>C &amp; EN London</i> , pp. 32-37,		Mar. 30, 1998.

Claims 31-32, 45-46 and 51-52 stand rejected under 35 U.S.C. § 103(a) as unpatentable over appellant's admitted prior art (AAPA) in view of Freemantle (Answer, page 6). Claims 47 and 53 stand rejected under 35 U.S.C. § 103(a) as unpatentable over AAPA in view of Freemantle and Blomgren (Answer, page 8). Claims 48 and 54 stand rejected under 35 U.S.C. § 103(a) as unpatentable

over AAPA in view of Freemantle and Jones (*id.*). Claims 50 and 56 stand rejected under 35 U.S.C. § 103(a) as unpatentable over AAPA in view of Freemantle and Abdul-Sada (Answer, page 9). Claim 57 stands rejected under 35 U.S.C. § 103(a) as unpatentable over AAPA in view of Freemantle and Ballingall (*id.*).

Based on the totality of the record, including the countervailing positions of appellant in the Brief and the examiner in the Answer, we reverse all rejections on appeal for reasons stated in the Brief and those reasons set forth below. Pursuant to our authority under 37 CFR § 41.50(a)(1)(2004), we further *remand* this application to the jurisdiction of the examiner for action consistent with our remarks below.

### **OPINION**

#### *A. The Examiner's Rejections*

With regard to the rejection of claim 31, the examiner finds that appellant admits that Figure 1, as described on page 8 of the specification, discloses conventional apparatus which is identical to that claimed with the exception of "an ionic liquid source" (Answer, page 7). The examiner cites Freemantle<sup>2</sup> for the disclosure of using ionic liquids in a variety of applications,

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<sup>2</sup>Freemantle is also discussed by appellant on page 9 of the specification.

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while also teaching the advantageous properties of ionic liquids, such as high thermal and chemical stability, large liquid temperature range, and no vapor pressure (*id.*). From these findings, the examiner concludes that it would have been obvious to one of ordinary skill in the art at the time of appellant's invention to include an ionic liquid source in the precursor vessel of the admitted prior art "because ionic liquids have the advantage of being nonvolatile, with no vapor pressure, a large liquid temperature range, and high chemical and thermal stability." *Id.*

As correctly argued by appellant (Brief, page 4), the admitted prior art discloses "conventional CVD solvents" which are usually organic liquids with a vapor pressure of greater than about 1 torr at room temperature (specification, page 3, ll. 18-20), not ionic liquids as defined in the specification (e.g., page 4, ll. 22-29). Appellant also correctly argues that there is "not even a hint" in Freemantle that an ionic liquid source should be used in vapor deposition (Brief, page 4).

Appellant argues that the examiner has failed to establish any motivation for combining the AAPA with Freemantle (Brief, pages 4-5). It is well settled that the initial burden rests with the examiner to establish some reason, suggestion or

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motivation to combine the teachings of the prior art references. See *In re Dembiczak*, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). Merely because the examiner establishes that all elements of the claimed subject matter were individually known in the art does not support a proposed combination of prior art references, absent some showing of the desirability of the combination. See *In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984) (The mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification); *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1462, 221 USPQ 481, 488 (Fed. Cir. 1984) (When determining the patentability of a claimed invention which combines two known elements, the question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination). On this record, we determine that the examiner has not met this initial burden by merely stating the properties of ionic liquids, as taught by Freemantle, as the requisite motivation or desirability for the proposed combination of prior art references (see the Answer, pages 7 and 10). The examiner has not established that the advantageous properties taught by

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Freemantle for ionic liquids would have been desired by one of ordinary skill in the CVD art.

With regard to the rejections employing the Blomgren, Jones, Abdul-Sada and Ballingall references (Answer, pages 8-10), the deficiency discussed above is not remedied by any of these references. Blomgren, Jones, and Abdul-Sada have merely been cited by the examiner to show various ionic liquids but the examiner has admitted that none of these references are relied upon to show the use of ionic liquid sources in any particular application, more specifically in CVD processes (see the Brief, pages 7-8). Ballingall has been cited by the examiner for its teaching of using a second vessel containing a second precursor in fluid communication with the reaction chamber (Answer, page 9). Therefore Ballingall also does not remedy the above discussed deficiency.

For the foregoing reasons and those stated in the Brief, we determine that the examiner has failed to establish a *prima facie* case of obviousness in view of the references of record. Accordingly, we cannot sustain any of the rejections on appeal.

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*B. The Remand*

Pursuant to the provisions of 37 CFR § 41.50(a)(1)(2004), we remand this application to the jurisdiction of the examiner for consideration and review of the following matters.

This application is a divisional application of S.N. 09/468,292, which is directed to a method for vaporizing reactants for vapor deposition of a thin film on a substrate using an ionic liquid solvent (see claim 1). Some of the claims in this parent application were the subject of an appeal (Appeal No. 2003-1162; see the Brief, page 2, ¶II), with a decision of a merits panel of this Board affirming all of the rejections except one (see the decision mailed Sep. 23, 2004, Paper No. 22, page 6).

Upon return of this application to the jurisdiction of the examiner, the examiner and appellants should reconsider the patentability of all claims in this application in view of the prior art cited in S.N. 09/468,292, as well as the prior art cited in this application, especially considering Frigo et al. (Frigo), U.S. Patent No. 5,232,869, and Freemantle as applied in

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Appeal No. 2003-1162.<sup>3</sup> It follows, therefore, that the examiner and appellants should review the rejections affirmed by the merits panel in Appeal No. 2003-1162, and apply any rationale used in that decision (Paper No. 22), affirming the rejection of method claims, as it would be applicable to the presently pending apparatus claims. It is noted that claim 1 in Appeal No. 2003-1162 requires "providing an ionic liquid" while claim 31 in this appeal similarly requires "an ionic liquid source."

We also note that appellant defines the formula of various classes of ionic liquids by the term "consisting essentially of" (e.g., see claim 45). The scope of this term was held indefinite under the facts presented in Appeal No. 2003-1162 (see the decision, Paper No. 22, pages 7-11). The examiner and appellant should review this claimed language in view of the facts of this application and determine whether a rejection under section 112, second paragraph, is appropriate.

This remand to the examiner pursuant to 37 CFR § 41.50(a)(1) (2004) is not made for further consideration of a rejection under appeal. Accordingly, 37 CFR § 41.50(a)(2) does not apply.

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<sup>3</sup>Frigo was cited on a PTO-1449 form but was not applied against the claims in this appeal.





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